

APPENDIX A

Road Design Issues

Through the course of the GP2020 planning process, staff has compiled a list of issues or concerns that should be incorporated into the proposed Public Road Standards or the Road Planning Design Manual.

COUNTYWIDE

1. **Different Community Types.** The circulation policies recommended by GP2020 advisory groups request staff to develop standards that reflect the “different community types: Village, Semi-Rural, and Rural Lands”. Each of these types has very different aesthetic character, travel needs, land use intensities, environmental conditions, and community development goals. Current Standards, however, make no distinction between urban, suburban, and rural land uses. Although community sensitive design features have been implemented on a case-by-case basis, no overall direction or community based guidance is provided for consistent road design. The Road Planning Design Manual could establish a “toolbox” of place-based design options for components such as: medians, shoulders, bike and pedestrian facilities, and traffic calming.
2. **Safe, multi-use roads.** Other policies recommended by GP2020 advisory groups request staff to “establish guidelines for safe multi-use roadways” and to “provide safe and attractive accommodation for all users of the roadway—including transit riders, bicyclists, and pedestrians”.

Response: Although safety is already a strong consideration in road design, previous road designs

primarily focused on serving automobiles. More balanced road designs and improvements are needed to serve the non-motorized and motorized travel alike. The Road Planning Design Manual will provide a toolbox of design options that will better accommodate all users of the road.

3. **Appropriate design and travel speeds.** Design speed is an important controlling feature related to safe road design. Other design features include, lane width, road alignment, access and side friction. Roads designed to encourage slower travel, for example travel speeds of less than 40 mph, are desired for areas with higher intensity residential and commercial uses, and may include context sensitive solutions.

Response: Additional road classifications, traffic calming guidelines, road network selection and the implementation of appropriate design exceptions may be used to encourage slower travel through villages.

4. **Wide, paved road shoulders.** Paved shoulders were identified by community groups as affecting community character in semi-rural and rural areas. Paved shoulder width is often dependent on parking requirements, vehicular recovery issues and bike lanes requirements. Paved shoulders also increase road construction costs and may encourage higher travel speeds when not used for on-street parking.

Response: This document identifies specific situations where reduced paved shoulders may be used.

5. **Existing conditions.** The construction of many existing CE roads preceded adoption of the current Standards. In many cases, neither the CE road nor the access from surrounding uses is consistent with existing Standards. Upgrading many existing roads to current road standards may necessitate significant realignment of the road into adjacent existing land uses, sensitive environmental habitats or significant community character resources and/or landmarks and could adversely affect access to adjacent properties.

Response: If upgrading existing public roads (including CE roads) would cause adverse impacts or substantial hardships, then design exceptions may be considered when safety is not compromised. Options will be outlined in the Road Planning Design Manual.

6. **Enforceable standards.** In some communities, it is unlikely that the current road network will be upgraded to meet existing standards as directed in the existing general plan Circulation Element.

Response: Design exceptions may be considered for communities where upgrades are highly unlikely and, if implemented, would adversely impact community character. In certain circumstances accepting a lower LOS may be considered for certain roads where the construction of the ultimate build out of the roadway would cause adverse impacts to the established community.

VILLAGE / VILLAGE CORE (URBANIZED)

The primary issue in Villages is ensuring that road standards reflect higher intensity land uses, the complexity of traffic movement and pedestrian activity, and the character of these developed areas. Key challenges are ensuring safe travel in areas with interactions between vehicles and non-motorized

traffic, encouraging pedestrian activity, supporting a wide range of commercial activities, and supporting community design initiatives

Road Design Issues /Objectives

1. **Design and travel speeds.** Roadways within commercial districts and residential neighborhoods would benefit from lower design speeds that would facilitate safer mobility for all travelers. Lower design speeds are consistent with slower travel speeds, shorter distances between intersections and higher levels of non-motorized traffic.

Response: Traffic calming measures and other appropriate design features related to design and travel speed may be considered to encourage slower travel through villages.

2. **Street width.** In some cases narrower streets can reduce the speed of traffic and would create opportunities for wider sidewalks in areas with limited right-of-way. Narrower street widths can facilitate improved pedestrian travel across intersections. Travel lanes of 11 feet may be problematic with certain vehicles such as large trucks.
3. **Use of medians.** Medians affect the character of a community, improve safety by separating opposing directions of traffic, and control traffic turning movements. Raised medians are generally preferred to continuous turn lanes in retail districts. Residential neighborhoods that do not contain closely-spaced driveway curb-cuts may also benefit from raised medians. Treatments of raised medians are important aspects of community character and will be addressed in the Design Manual.
4. **Pedestrian facilities.** In commercial areas, sidewalks need to be wide enough to accommodate significant pedestrian activity as well as street furniture and plantings. In retail districts, 8 feet minimums allow for higher pedestrian

volumes, while 6 feet minimums allow for side-by-side pedestrian travel in residential neighborhoods. Where high pedestrian volumes are not expected, the current 5 foot standard is recommended to minimize construction costs for walkways.

5. **Variety of shoulder requirements.** In town centers, as well as residential neighborhoods, on-street parking is desired. Standard shoulder widths in commercial areas with convenient off-street parking lots, however, may be unnecessary and create a wider roadway that may encourage higher speeds. Provisions should be made for large trucks and turning in commercial areas.
6. **Frequent access to driveways and local roads.** Current road classifications limit access from individual properties. Traffic calming options should be considered for existing roads where access is not limited and frequent curb-cuts already exist. Residential neighborhoods should avoid fronting on CE roads in Village areas.
7. **Bicycle facilities.** The Bicycle Master Plan accompanies the CE and identifies bicycle routes, lane, and pathways. Generally, dedicated bicycle lanes are preferred on higher-speed roadways to ensure safe travel. However, providing dedicated bicycle lanes may be limited by available right-of-way and environmental or community constraints.
8. **Rural Villages:** Road classifications should include a specialized road type suited to rural villages. Treatments added to roadways to slow traffic entering village areas should be addressed in the Road Planning Design Manual or other implementing document, policy or ordinance.

SEMI-RURAL (SUBURBAN)

CE roadways in Semi-Rural areas should be compatible with the relatively rural character of these areas. They also need to accommodate residential areas with frequent driveway access.

1. **Design and travel speeds.** When CE roads traverse Semi-rural areas, -- such as Fallbrook, Ramona, Alpine, Valley Center and Jamul, -- they often cross terrain that is steep and/or environmentally sensitive. Although direct residential access onto CE roads should be minimized, past development has allowed many driveways onto CE roads and created individual lots requiring direct access. Furthermore, many CE corridors were established along existing roadways that will be difficult to upgrade to their current classification.

Higher design speeds are not compatible with frequent driveway access points and higher levels of non-vehicular activity. Lower design speeds are desired for CE roads in these areas to reduce overall grading and environmental impacts. Lower travel speeds are also often desired to address access issues to existing parcels/development.

Response: Although lower design speeds are desired in residential areas, efforts must be made to ensure that appropriate travel speed is maintained for through traffic and that development standards require driveways with sufficient sightlines.

2. **Community character.** A frequent concern for many community groups is that the current road standards can create roadways that are inconsistent with the rural character of their community. Higher design speeds, for example, require relatively straight, flat roads and wider cross-sections with little curvature that require extensive

grading and dramatically disturb the undulating topography and natural features of the land.

Response: This handout includes road classifications with narrower widths and with design speeds that allow the road to more easily follow the natural terrain. Design exceptions may also be warranted in specific locations to better address environmental and community concerns. Naturalistic landscaping in the parkways and medians are also compatible with the rural character desired in semi-rural areas.

3. **Paved shoulders.** Community representatives indicate that paved shoulders, particularly on two-lane roads, impact the rural character of semi-rural residential neighborhoods. Paved shoulders are also linked with higher travel speeds, which are undesirable in many neighborhoods. Some purposes for paved shoulders, such as vehicle recovery and parking, may be unnecessary in low-intensity areas characterized by large-lot development. Unpaved shoulders can function in similar ways to paved shoulders and also serve as a walkway, pathway or trail. Unpaved shoulders, when combined with natural swales, can also provide for roadway design consistent with the rural character desired by many communities.
4. **Pedestrian and bike trails.** Although pedestrian use of roadways is far less in Semi-Rural areas than in Village/Village Core areas, pathways and trails are still commonly used for recreation and short-distance travel. The key objective is to ensure that pathway design respects rural character. For example, trails set back from the road with naturalistic landscaping would be appropriate in semi-rural areas. Bikeways and trails are depicted in the County's Bicycle Master Plan and Trail Master Plan, respectively.

5. **Safety:** Provide safe areas for bus stops and emergency pull-offs if rural areas.
6. **Flexibility:** Rural communities would like more options for design features such as curbs and gutters and for adding amenities like trails and bike facilities.

RURAL LANDS

CE roads in Rural Lands should be compatible with the physical terrain and rural character, but may also accommodate high volume regional travel. In those cases, character issues should be balanced with safety and capacity concerns.

1. **Design and travel speeds.** In Rural Lands, design speed issues are primarily associated with the difficulty of building straight, flat roads on steep or physically constrained land. Within East and North County communities, Rural Lands are primarily mapped in such areas. Rather than require extensive grading that adversely impacts the physical environment and community character, a new CE classification is needed to accommodate areas with steeper terrain. Lower design speeds are desired for CE roads in some areas to reduce overall grading and environmental impacts. Lower travel speeds also address access issues to existing development, and a CE road that allows for this type of terrain would have a reduced horizontal and vertical turning radii. However, *efforts must also be made to ensure that appropriate travel speed is maintained for through traffic.*
2. **Rural Character:** In rural areas, road standards should minimize impacts on the rural landscape. That means fitting roads to existing contours, allowing narrower roadbeds by minimizing requirements for paved shoulders,

and utilizing swales rather than curbs/gutters at the road edge.

- 3. On-Street Parking:** Because of the very low development potential, on-street parking is not usually needed in Rural Lands.
- 4. Shoulders:** To preserve the rural character, shoulders may be minimized in Rural Lands. Shoulders serve as a recovery area for errant vehicles and allow for parking to accommodate disabled vehicles. They do not always need to be fully paved. However, a minimum of 2 feet of paving is important to preserving public safety. Shoulders also serve as an important safety feature on high-volume routes, where the full width of the shoulder generally needs to be paved.
- 5. Environmental Issues:** To avoid adversely impacting areas with significant environmental resources, design exceptions may be justified. Exceptions that may be considered include allowing tighter horizontal and vertical turning radii, minimizing the width of shoulders, and use of drainage swales.
- 6. Bike Facilities:** If paved shoulders are required, they can be used as bike routes. Separate bike paths, located in the parkway, could also be used for regional bike, hiking or equestrian trails. Bikeways are depicted in the County Bicycle Master Plan.
- 7. Pedestrian Facilities:** Rural pedestrian pathways should use more natural materials and have alignments that follow the natural terrain. A wider parkway may be needed to provide a more curvilinear alignment. In areas with more severe terrain, pathways may not be feasible, or the unpaved portion of the shoulder may need to serve as the

pathway. Trails are depicted in the County Trails Master Plan.

- 8. Fire Access Routes:** Some communities wish to retain mapped CE roads that are not yet built (or existing roads not built to CE road standards) as fire emergency routes that would not be open to public use. These emergency access routes can be added to community plans but will not be included in the CE Element. Road standards for fire emergency routes, and policies for gated roads, will be addressed outside the General Plan process. For preliminary information on gated roads, see Appendix C.

APPENDIX B

Preliminary Road Planning Design Manual Preferences

A Road Planning Design Manual will be developed that outlines recommended road design features for specific areas. The goals of the design manual will be to encourage non-vehicular circulation and to recommend road design features or amenities that reflect the unique community or area in which a road traverses. It will provide potential design solutions for situations where traffic-related goals conflict with other policy objectives or with land use-transportation interactions. Those conflicts tend to occur when CE roads need to serve multiple purposes or when CE roads travel through land use districts where slower speeds are desired. The toolbox of amenities should identify the following:

- Multi-modal components: How pedestrian, bicycle and other types of circulation should be integrated into the County's public road network.
- Enhancements: How design options can be used to enhance community character or protect environmental resources. These may include traffic calming, shoulder treatments, landscaping, and curb designs.
- Design Exceptions: When design exceptions are appropriate to resolve specific problems or to implement optional design features.
- Transitions: How to provide transitions when high-speed roads enter Villages and town centers.
- Medians: Medians affect the function of a roadway by controlling turning movements and by providing dedicated turn lanes. The Road Planning Design Manual will provide guidance for when raised, depressed or continuous turn

lanes are appropriate given specific land use or traffic conditions. It will also define treatment options for medians. When treated, raised medians improve the visual character of a community and provide a safe haven at dedicated pedestrian crossings.

- Shoulders: Identify paving, curb and shoulder width options, and identify how bike lanes should be incorporated into shoulders. Identify when swales should be used to help protect watersheds.
- Parkway Designs: Identify landscaping and multi-modal options (pedestrian paths, bike paths and trails) for different road types and land use conditions. Identify other pedestrian enhancements, and describe how to locate utilities within the parkway.

Road Design Options for Villages

- Traffic Calming: Higher vehicle speeds, typical of arterial roadways, create conflicts in Village areas with increased pedestrian and bicycle activity as well as more frequent turning movements and driveway access. In order to reduce the frequency and severity of collisions, as well as improve pedestrian safety, traffic calming measures may be integrated into Village areas. Traffic calming measures could include reduced lane width, visual cues (signage, landscaping), textured surfaces, and lateral shifts.
- Main Streets: Whenever possible, main streets should be developed along non-CE roads. When that is not possible, traffic calming measures should be added as the road

transitions into a main street that slow traffic, improve pedestrian circulation, and add amenities that are desirable within a town center. In limited circumstances, such as Main Street applications, pedestrian crossings not located at intersections may be considered provided that measures are taken to ensure pedestrian safety.

- **Pedestrian Amenities:** Pedestrian amenities appropriate for Village areas include (but are not limited to) wider sidewalks, street furniture, sidewalk bulbouts (curb extensions), crossing islands, lighting, street landscaping, and limitations on driveway cutouts. These amenities may be used in conjunction with traffic calming and, where appropriate, reduced lane widths.
- **Shoulders/Parking Lanes:** In general, wider shoulders are encouraged in Villages to allow for easier access to on-street parking and increased bicycle activity. However, there are instances where demand for on-street parking is minimal (for example, commercial areas with significant off-street parking). Wide paved shoulders, however, can result in higher travel speeds. Under these circumstances, the paved shoulder width should be reduced as low as 2 feet (unless bike lanes are required) and edge lines should be provided to delineate shoulders from the travel lane.
- **Couplets:** Commercial centers need to be located near major arterials in order to ensure economic success, but the size, traffic volumes and speeds associated with arterials

are in conflict with pedestrian-oriented commercial centers. Couplets split the traffic for one roadway into two one-way road segments separated by land development.

Changes to street designs in Villages will be coordinated with zoning requirements that control front yard setbacks, block lengths, building heights, and other building or site design features.

Mitigations for Villages

When high-speed, high-capacity roads are located within Villages, mitigations may be applied that minimize impacts to non-vehicular circulation, commercial centers, or specialized adjacent uses. Many types of road mitigations are buffers, which isolate the arterial from adjacent uses, and recommendations for mitigating their impacts will be defined in the Road Planning Design Manual.

Specific types of mitigation may include raised berms and wider parkways that reduce noise levels and separate travel ways and pedestrian circulation. Grade-separated interchanges may be needed for prime arterials or freeways in order to maintain connections within the local road network. Traffic calming should be used to reduce speeds around schools or other areas where vehicular speeds may be in conflict with adjacent uses. Finally, couplets may be used in town centers to reduce the width of arterials.

Table B-1: Preliminary Road Design Manual Preferences

NAME ¹	LOCATION	PRELIMINARY PREFERENCES
6.1 ARTERIAL	Village	<ul style="list-style-type: none"> • <u>Limit use</u>: Identify mitigations when using an Arterial cannot be avoided. • <u>Interchanges</u>: Provide grade-separated interchanges where appropriate to improve local traffic flow and retain local road connections. • <u>Parkway</u>: Provide buffers that reduce visual and noise impacts.
	Semi-Rural/ Rural Lands	<ul style="list-style-type: none"> • Develop median and edge treatments that improve watersheds and help retain rural character.
4.1 PARKWAY	Village	<ul style="list-style-type: none"> • <u>Limit use</u>: Identify mitigations when using a Highway cannot be avoided. • <u>Shoulder</u>: Consider parking restriction due to high-speed traffic. • <u>Parkway</u>: Provide buffers that reduce visual and noise impacts.
	Semi-Rural/ Rural Lands	<ul style="list-style-type: none"> • <u>Medians and Parkways</u>: Develop median and edge treatments that improve watersheds and help retain rural character.
4.2 BOULEVARD	Village	<ul style="list-style-type: none"> • <u>Medians</u>: Typically use landscaped or treated raised medians. • <u>Shoulders</u>: Typically pave shoulder for on-street parking. In limited circumstances, combine a 2' paved shoulder with parking restrictions where adequate off-street parking is available. • <u>Parkway</u>: Provide walkways setback from road edge by a landscaped buffer. • <u>Traffic Calming</u>: Identify ways to slow traffic and improve pedestrian crossings.
	Semi-Rural/	<ul style="list-style-type: none"> • <u>Medians and Parkways</u>: Develop median and edge treatments that improve watersheds and help

¹ Some names have changed. See Table 1 for an explanation of how these standards are related to existing or previously approved standards.

NAME ¹	LOCATION	PRELIMINARY PREFERENCES
	Rural Lands	<p>retain rural character.</p> <ul style="list-style-type: none"> • <u>Paved Shoulder</u>: Typically pave only 2' of the shoulder to help retain rural character. • <u>Parkway</u>: Use surface materials for trails that are compatible with rural character.
2.1 COLLECTOR 2.2 LIGHT COLLECTOR 2.3 MINOR COLLECTOR	Village	<ul style="list-style-type: none"> • <u>Medians</u>: Typically use landscaped or treated raised medians. Identify limited areas where use of a continuous turn lane is warranted. • <u>Shoulders</u>: Typically pave entire shoulder for on-street parking. In limited circumstances, combine a 2' minimum paved shoulder with parking restrictions where adequate off-street parking is available. • <u>Parkway</u>: Provide walkways setback from the road edge with a landscaped buffer. On roads designed primarily for motorized traffic, provide buffers to reduce visual or noise impacts. • <u>Traffic Calming</u>: Identify ways to slow traffic at transition areas and in areas planned for multi-modal traffic. Identify methods for improving pedestrian crossings.
	Semi-Rural/ Rural Lands	<ul style="list-style-type: none"> • <u>Medians and Parkways</u>: Develop median and edge treatments that improve watersheds and help retain rural character. • <u>Paved Shoulder</u>: Typically pave only 2' of the shoulder to help retain rural character. • <u>Parkway</u>: Provide landscaping to help retain rural character. Trails located within parkways should use surface materials that are compatible with rural character.

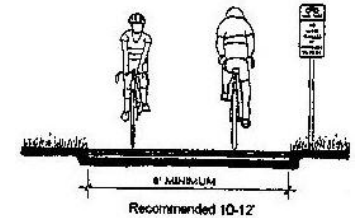
APPENDIX C

Bikeways ²

Bikeway is the generic term for facilities that provide for bicycle travel. There are three types of bikeways:

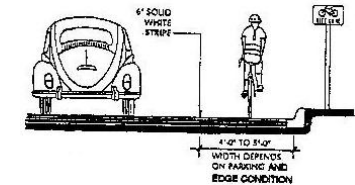
- **Class I Bikeway (Bike Path)** – Typically called a bike path, this provides for bicycle travel on a paved right-of-way completely separated from any street or highway. These are particularly popular with novice cyclists and avoided by experienced cyclists because they can become overly popular and crowded.

Location: If located in the right-of-way for a Circulation Element road, a bike path would be located in the Parkway.



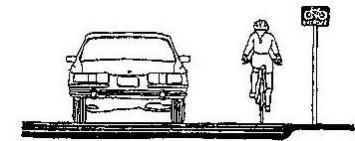
- **Class II Bikeway (Bike Lane)** – These are often referred to as a bike lane. It provides a striped and stenciled lane for one-way travel on a street or highway. When properly designed, bike lanes help improve the visibility of bicyclists.

Location: If located in the right-of-way for a Circulation Element road, a bike lane would be located between the Shoulder and Traveled Way.



- **Class III Bikeway (Bike Route)** – Generally referred to as a bike route, it provides for shared use with pedestrian or motor vehicle traffic and is identified only by signing. This is recommended when there is enough right-of-way for bicyclists and motorists to safely pass.

Location: A bike route would share the Traveled Way and Shoulder with vehicular traffic.



Although these facilities are designed for bicycle travel, it is important to recognize that all public roadways, except for those segments of freeways where it is prohibited, are open to travel by bicycle. There are some corridors in the County that may be more suitable for “Share-the-Road” signage rather than official designation as bikeway facilities.

² From County of San Diego, Bicycle Transportation Plan

APPENDIX D

Preliminary Information: Non-Circulation Element Roads

At the request of several Steering Committee members, preliminary information for Fire/Emergency Access roads was added to this handout. This information is subject to further review and refinement based on input from the DPLU Fire Services Section and the respective fire protection districts.

Fire Access Road

A Fire/Emergency Access Road is a Non-Circulation Element road (either public or private) that provides a secondary ingress/egress route for the public in the event of a fire emergency. These roads are not identified on the Circulation Element (CE) and are not required to be built to the CE Road Standards. However, in order for a road or route to be designated as a Fire/Emergency Access Road, it must, at a minimum, meet certain specified criteria and standards contained in the San Diego County Fire Code and may be further regulated at the discretion of the local Fire Chief, the County Fire Marshall, and or the Fire Services Section.

Existing Fire/Emergency Access Roads

According to the County's Fire Marshall, roads designated and used for the purposes of a Fire/Emergency Access Road must meet the following criteria and standards as specified in the San Diego County Fire Code:

- Paved Width - All access roads must have an unobstructed improved width of not less than 24 feet.
- Surface - All access roads must be designed and maintained to support the imposed loads of not less than 50,000 pounds, with an all-weather driving surface.³ If the slope of

the road exceeds 10%, the road must be paved with asphaltic concrete. The paving and sub-base shall be installed to the standards specified in Section I-M of the San Diego County Off-Street Parking Design Manual.

- Turning Radius - 28 feet (minimum) as measured to the inside edge of the improved width.
- Minimum Vertical Clearance – Not less than 13 feet 6 inches, vertical clearances or width may be increased at the discretion of the Fire Chief.

Gates for Emergency Access Roads

Permitting an emergency access road that is gated will require policies designed to ensure that the road is available as an access route for emergency vehicles and as an egress route for local residents during a fire emergency.

When fire access roads are gated, they can obstruct access for emergency vehicles. Gates can also obstruct egress routes for residents fleeing the fire. Experience shows that unless residents use a gated road on a regular basis, it is unlikely they will use that route during a fire emergency. When roads are gated, they also tend to become obstructed by parked vehicles or used as storage areas.

Fire Code Requirements

California Fire Code and County Fire Code section 902.2.4.1 states that

“Any gate or other barrier that could obstruct or restrict a fire access road or driveway must meet Fire Code requirements

³ All weather surfaces are further defined in the County Fire Code

designed to insure rapid access and egress under emergency circumstances.”

Because roads or driveways serve as fire access roads, they must provide required fire engine access to within 150 feet of all exterior portions of a structure. Therefore, any gate or access barrier has a high potential for obstructing the fire access, and is therefore regulated by the County and State Fire Codes.

Proposed Policies

At this time, County staff is developing policies for operational standards on gates on fire access roads and driveways. Draft policies divide gates into two categories:

- Level 1: (simpler) Any gate or access barrier, automatic or manual, serving one, two or three residences, or an occupancy NOT including assembly, educational, institutional or hazardous groups.
- Level 2: (more complex) Any gate or access barrier serving four or more residences, or an assembly, educational, institutional or hazardous occupancy.

Draft policies would require all gates or other control devices across fire access roads (and driveways) to open the full required width as follows:

- 16’ minimum serving one or two dwellings (and possibly agricultural areas); and
- 24’ minimum serving more than two dwellings OR any commercial property.

Detailed policies for operational requirements of gates on fire access roads or driveways for both large and small projects are under development and will be available for public review at a future date.

Note: The Fire Marshalls understand that roads in the County are being proposed as Fire Access Roads which currently do not meet the minimum standards. They wish to maintain the classification for these proposed roads, but prefer not to put an exception to the standard in the text. Development will be the impetus for these roads and new development will be required to dedicate adequate land and provide their share of funds toward the road.

APPENDIX E

Glossary of Terms

Alignment: A planning term used to identify the general location of a current or future roadway. For future roadways, it is intended to describe a designated area or buffer set aside so a specific alignment can be determined as the need is established.

Average Daily Trips (ADT's): The total traffic volume during a given period divided by the number of days in that period. ADT volumes can be determined by continuous traffic counts or periodic counts.

Bike Lanes: Bike lanes are paved areas located between the travel lane(s) and shoulder. Bike lane locations are identified on the County's Bicycle Master Plan, and will require wider paved shoulders and outside travel way.

Curve Radius: A geometric design feature of the roadway. The curve radius can determine safety features and design speed of a given segment of road.

Capacity: The measure of a transportation facility's ability to accommodate a moving stream of people or vehicles in a given time period. Capacity and Level of Service (LOS) are analyzed separately and are not simply related to each other; both must be fully considered to evaluate the overall operation of a facility.

Collector: Collector roads are designed to collect traffic from local streets and direct that traffic into larger arterials or regional expressways. In rural areas, collector routes serve intra-county rather than statewide travel. In urban areas, collector streets provide direct access to neighborhoods and arterials.

Design Speed: The design speed of a roadway dictates which geometric design standards are used such as stopping sight distance, radius of curves, and banking (super-elevation) of road surfaces.

Expressway: A controlled access, divided arterial highway for through traffic, the intersections of which are usually separated from other roadways by differing grades.

Freeway: A divided arterial highway designed for the unimpeded flow of large traffic volumes. Access to a freeway is rigorously controlled and intersection grade separations are required.

Grade: The slope (ratio of change in elevation to change in distance) of a roadway typically given in percent. *For example, a 2% grade represents 2-feet of elevation change over a 100-foot distance.*

Level of Service: A qualitative measure describing operational conditions within a traffic stream and the motorists' perceptions of those conditions. For example, LOS A represents free flow, almost complete freedom to maneuver within the traffic stream. LOS F represents forced flow, more vehicles are attempting to use the freeway than can be served resulting in stop and go traffic.

Local Road/Street: A road or street intended for access to adjacent properties.

Median: The portion of the roadway that separates opposing directions of traffic. It can be raised, landscaped or level with the roadway, with turn features added intermittently or used as a continuous left turn lane.

Multimodal (transportation): Generally refers to all modes of transportation, including motorized and non-motorized forms. Non-motorized modes within the unincorporated County typically include bus transit, pedestrian walking or jogging, biking, and equestrian movements.

Right of Way (ROW): The overall width of the roadway components, technically the area from property line to property line. These areas are predominately used for vehicular transportation and may also contain pedestrian walkway, utility easements, railroad crossings, and/or on-street parking areas.

Road Bed – the specified width of pavement of the roadbed and is measured from curb face to curb face. In the absence of curbs, the pavement width is measured from the edges of the roadbed. The roadbed or pavement width is typically utilized for vehicular traffic.

Parkway: The area from shoulder edge to the property line. Parkway width requirements can increase if bike lanes or other facilities/amenities are indicated on countywide master plans.

Public Road: Any road under the jurisdiction of and maintained by a public authority such as Federal, State or County jurisdictions, which is open to public travel.

Shoulder: The area between the travel lanes and the parkway, which is usually set aside for parking, bicycle lanes and emergency pull-off.

Sidewalk: A paved pedestrian walkway, generally located within the parkway.

Trail: A marked, graded or paved non-motorized path, typically removed from vehicular roadways that are primarily recreational in nature. Trails can also serve as alternative modes of transportation. Trail characteristics vary depending upon location and type of use.

Threshold Capacity: The maximum capacity a road can carry at an acceptable level of service (defined by County policy as LOS A through D). Traffic volumes above this threshold indicate an unacceptable level of service (LOS E, F).

Traveled Way: The lanes of a roadway which the moving vehicles travel; does not include shoulders or parking lanes.